

Caldwell

The Caldwell reference discloses a radially focused x-ray grid that is composed of thin strips of lead (an x-ray absorbent material) having cells for the transmission of the x-rays that are oriented such that the diagonals of the cells are preferentially parallel or perpendicular to the sides of the grid. The length of each side wall of the cells is uniform length. Caldwell does not disclose or suggest or imply a flat, focused cellular grid having cells with sides of differing lengths that are inclined to the focal point. Furthermore, Caldwell is silent regarding the contents of the cells except to say that the cell may be filled with bakelite to increase the strength of the grid. The instant grid in contrast is a grid having air filled throughgoing cells.

Albert

The Albert reference teaches in one embodiment a radiation collimator for radiation treatment not X-ray diagnosis that is composed of a laminate of x-ray absorbent material and an x-ray transmissive spacer material that includes cells that are step-wise focused to a focal point. The spacer material completely extends through each of the cells. The Applicant notes in contrast to the instant invention that Albert does not disclose a grid having cells with inclined partitions to a focal point, but rather a laminate where each layer includes a plurality of cells with the partitions of the cells being perpendicular to the top and bottom surfaces of the laminate. The step-focused grid is produced by stacking the individual layers.

Examiner Church in the interview of June 15, 1998, acknowledged that Albert only described a step-wise focused grid, and did not describe the throughgoing cells of the instant invention. It was said that Albert was only cited to show that plating of the partitions with an x-ray absorbent material was known at the time of the current invention. Applicant respectfully points out that a radiation collimator suitable for medical radiation treatment has physical properties that are opposite to an X-ray grid for medical X-ray diagnosis. The two fields are entirely different in that medical X-ray treatment requires the collection and concentration of scattered rays while medical X-ray diagnosis reduces the scatter as much as possible.

Millenaar

The Office has previously cited Millenaar disclosing a cover for a cellular grid. While Millenaar discloses a cover for his linear grid, he does so in the context of the manufacture of a composite material from which an x-ray grid may be constructed. He does not teach or even suggest, as the claims recite, that the cover designed to enclose layers of the grid material also *cover and seal the cells* of a grid in order to give additional structure to the grid, and to seal the cells to contain either a gas or sustain a vacuum therein.

Mattsson

Mattsson describes a *conventional grid*, as opposed to the current invention, with cells having sidewalls parallel to the edges of the grid. This conventional grid is then moved in manner so that the cells have a trajectory over a patient in agreement with the Mattsson angles. In the instant invention the cells are formed so that the trajectory of the radiation source over the cells is in compliance with the angles of Mattsson, when the grid is moved parallel to the longitudinal axis of the grid. In the Mattsson reference, the cells are formed so that the sides of the cells are parallel to the sides of the grid, and consequently the grid must be moved in a motion that is not parallel to the longitudinal side of the grid to satisfy the angles of Mattsson.

In contrast, applicant points out that in the present application the cells are angled oblique to one edge of the grid so that simple rectilinear motion parallel to that edge causes the cells to move at the Mattsson angles. The grid is constructed to incorporate the angles of Mattsson rather than forcing the grid to be moved in a direction that reflects the angles of Mattsson.

The Claims

Applicant will now address the individual claims, and offer remarks as to why these claims are distinguishable over the cited art.

Independent claim 46 recites a flat cellular grid having throughgoing cells with partition walls that are inclined to intersect at a focal point for the grid. As has been previously discussed neither Caldwell or Albert singularly or in combination suggest or imply such a structure, and thus is allowable over the art.

Claims 47 through 51, 53, and 54 are dependent claims, and are thus, as a basic tenet of patent law, allowable as being dependent upon an allowable independent claim.

Claim 55 is similar to claim 46 and as such distinguishes over the cited art as described above. However, claim 55 further recites that the diagonals of the cells are neither perpendicular or parallel to the longitudinally extended side when that side is moved in a substantially parallel direction to that side. The Office has stated that a moving means is required to be recited to make the claim complete. Applicant respectfully disagrees and states that the movement is cited to provide an orientation of the the sides of the cells to the direction of movement, for the erasing of the images of the cells on an x-ray image after passing through the grid when the longitudinally extended side is substantially parallel to the direction of movement and is designed to address the use of these cellular grids in existing x-ray machines.

Claim 56 is dependent on claim 55, and articulates the actual Mattsson angles.

Applicant now submits that the claims are in condition for allowance and respectfully requests the same.

Respectfully submitted,

I hereby certify that this correspondence is deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks Office, Washington, DC 20231 on:

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